

1.1 Fire Safety – problems and challenges approach of the state fire service in Poland (short version)

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Cost Action TU0904
Integrated Fire Engineering and Response
Working Group 1 – Fire Behaviour and Life Safety

**Fire Safety – problems and challenges
Approach of the State Fire Service in Poland**

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1

Cost

Civilizations development – friend & enemy

Perspective of Fire & Rescue Services

- better understanding of fire phenomena
- highly advanced methods and means for fighting fires
- better personal protection equipment

technological progress

- increase of fire hazards
- more large scale fires/accidents
- more and more unexpected events

2

Cost

Problems and challenges for Fire & Rescue Services (1)

- Continuously broadening range of activities

from  cat on a tree ... up to  ... major industrial disaster

- Quick urbanization and bigger traffic

3

Cost

Problems and challenges for Fire & Rescue Services (2)

- Higher, bigger and more complicated buildings/structures
 - „Bilbao effect” – age of iconic buildings
 - Huge buildings with complex structures
- New but not always (fire) safer technologies
 - thermal insulation materials
 - decorative elements
 - innovative substances
 - plenty of plastics
- Personal safety of rescuers
 - huge buildings with complex structures
 - faced with situations far beyond imagination



 

4

Cost

Problems and challenges for Fire & Rescue Services (3)

- Results of climate changes
 - devastating natural disasters
 - sky-high scale
 - thousands of affected people
- Knowledge and information management
 - keeping up technological progress (not only skills but also wide and multidisciplinary knowledge)
 - fire investigations
 - best practices
 - lessons learnt
 - statistical analyze
 - avoiding a syndrome of „already solved problems”

5

Cost

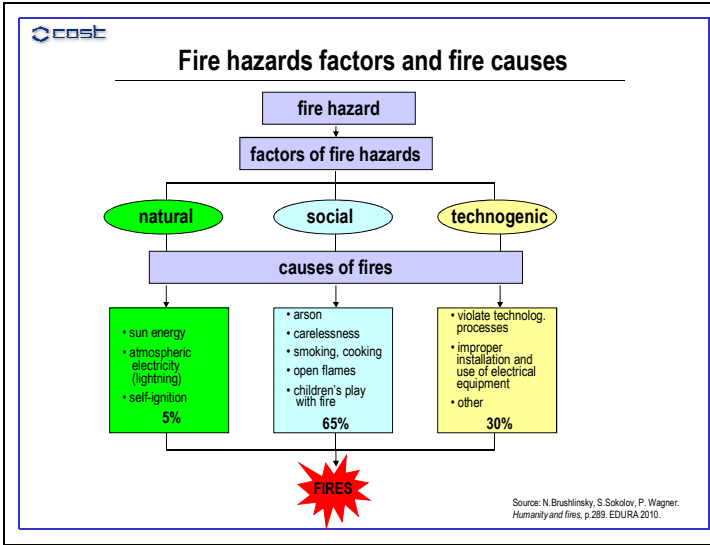
Problems and challenges for Fire & Rescue Services (5)

- Necessity of more holistic approach to (fire) safety
 - more balance between technical and human/social factors of (fire) safety
 - improvement of (fire) safety awareness - community safety (including residential fire alarms and sprinklers)
 - rising safety demands

Why ?

because experience shows that human factor is the weakest element in a fire safety chain

6



7

New approach to regulations on Fire Prevention (1)

Features of an old approach – prescriptive regulations

- ban-injunction oriented
- empirically based mainly (experience and lessons learnt)
- specify only obligatory requirements
- precisely define strict parameters
- aspiration for literalness and explicit

tend to fit multidimensional (complex) reality to strictly defined patterns

with such an approach it was possible do design all building following fire regulations only, without any engineering analysis

but life shows:

- it does not work in many situations (e.g. in a big structures with complicated layout)
- to base on lesson learned only is not enough now

8

New approach to regulations on Fire Prevention (2)

Features of a new approach – fire engineering/performance based design

- protection measures adjusted to risk profile and to protection goals
- fire safety solutions are not in contradiction with functionality of building
- more room for innovation without decreasing protection level - protection measures do not create barriers for realization of new architectonic and spatial solutions
- possibility of costs reduction without dropping safety level – alternative solutions
- possibility of utilizing the most recent and most advanced scientific achievements

9

New approach to regulations on Fire Prevention (3)

New approach – layer approach

- I layer - obligatory requirements (derived from EU directives) - only the most crucial (e.g. class of building fire resistance)
- II layer - optional requirements based on (fire safety) engineering knowledge and tools:
 - only goals to reach are specified
 - provides designer with flexibility - allows choosing alternative ways of reaching specified goals

10

New approach to regulations on Fire Prevention (4)

Examples of using fire safety engineering methods in practice

- calculation of RSET (required safe escape time) or ASET (available safe escape time)
- selection of fire protection installations in individual building - base on assumed scenario of fire development (computer simulations - fire models)
- defining parameters of fire protection installations (e.g. smoke control systems)

11

Evolution of fire prevention related regulations – directions

- higher attention to requirements concerning preparation of buildings/structures for firefighting and rescue activities
- more flexibility in using alternative solutions – more room for fire safety engineering
- filling gaps and adjustment to changes in other regulations
- (new) general rule - new fire protection requirements are applicable for newly constructed buildings; for existing ones conformity must take place during closest modernization
- more precise specification of requirements in the range of acceptance of construction designs (including improvement of this process supervision)

12